PART - II

Section - II

Q NO 8

(a) The width of a rectangular room is 60% of its lenght. If the lenght of the classroom is 15 ft. what are the room's dimension?

Given:

Lenght of a room = 15 ft

Width of a room = 60% of its length

To find:

Dimension of room.

Solution:

Width = W = 60% of 15

$$= \frac{60 \times 15}{100}$$

$$= 3 \times 3$$

W = 9 ft.

Find the dimension of room.

① Area:

Area = A = lenght × width

A = L × W

A = 15 × 9

A = 135 ft²

② Perimeter:

P = 2 (Lenght × width)

= 2 (135)

P = 270 ft²

Ans

b) While at a dog park, Veena run 48ft east then turned and run 20ft north to reach the water station. If she would run straight there from where she started, how far would she run?
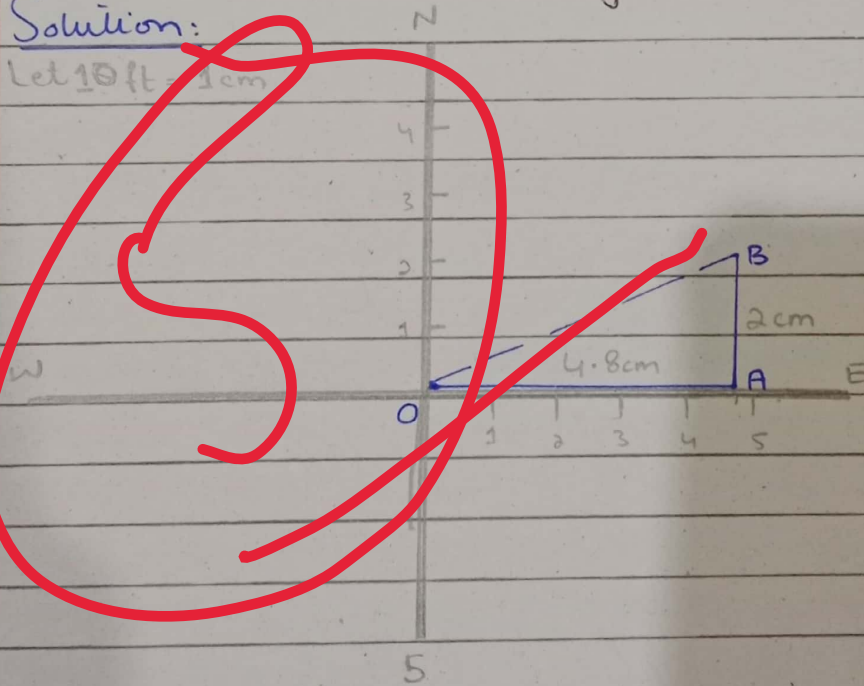
Given:
⇒ Veena from a point going to water station.
⇒ She 1st run 48ft North east
⇒ Then she run 20ft North

To find:
⇒ Straight distance from starting point towards g water station

Solution:
Let 10ft = 1cm

Put back 1cm = 10ft

Using pythagors theorm:

$$(H)^2 = (Base)^2 + (Perpendicular)^2$$
$$= (48)^2 + (20)^2$$
$$= 2304 + 400$$

$(Hy)^2 = 2704$

Taking underroot both side

$$\sqrt{(Hy)^2} = \sqrt{2704}$$
$$Hy = \sqrt{(52)^2}$$
$$Hy = 52 \, ft$$

Veena has to move straight from starting point "O" towards water station "B" coving a distance of 52 ft.

c) In a class, the average marks of 40 students was calculated to be 52.15. It was later discovered that the marks of a student were taken to be 49, instead of 85. Find the average marks of the class.

Given:

↳ Total No. of students = 40
↳ Average of 40 students = 52.15
↳ Marks taken to be 49 instead of 85.

Find:

↳ The average = ?

Solution:

Actual marks = 85
Marks taken = 49
Difference / Error = 85 - 49
= 36

Now 36 are the marks taken

less while finding the average of 40 students.

Now, divide the it on 40 (the total No. of students) to add it to its average

$$40 \div 36 = 0.9$$

Now add it the the existing average to get correct average

$$52.15 + 0.9 = 52.24$$

Correct Average = 52.24   Ans.

d) 37 people like vegetable pizza and 25 people like chicken, 3 people like Neither. A person was randomly asked about choice of pizza. Calculate what is the probability that person likes chicken pizza?

Given:

People likes vegetable pizza = 37
People likes chicken pizza = 25
People like Neither of pizza = 3

Calculate:

Probability of person likes chicken pizza?

Solution:

Formula to find probability of an event = P

$$P = \frac{No. \text{ of event}}{Total \ No. \text{ of event in Sample Space}}$$

To find probabilty of people like chicken pizza = P_c

Mathematically

$$P_c = \frac{No. \ of \ people \ like \ chicken \ pizza}{Total \ of \ No. \ of \ people \ present}$$

$$P_c = \frac{25}{37+25+3}$$

$$= \frac{\overset{5}{\cancel{25}}}{\underset{13}{\cancel{65}}}$$

$$= \frac{1}{3} \ or \ 0.33\%$$

$$P_c = 0.33\%$$

Probabilty of ~~find~~ person likes chicken pizza, when asked randomly is 0.33%.

Q No 6

b) A man order a pizza of small size, medium and larger sizes for 18 persons; One slice per person. Each size contains different Number of slices and the ratio of their slices is 2:3:4. if each slice is of 40 g and the pirce of smaller pizza is Rs 320. find the price and weight of total pizza.

Given:

↳ 3 pizzas of small, medium and large size

↳ No. of person = 18

$\hookrightarrow$ Total slices of pizza = 18

$\hookrightarrow$ Ratio of slices of pizzas = 2 : 3 : 4

$\hookrightarrow$ Weight of 1 slice = 40 g

$\hookrightarrow$ Price of small pizza = 320 Rs

To find:

$\hookrightarrow$ weight of total pizza = W = ?

$\hookrightarrow$ Price of Total pizza = P_T = ?

Solution:

$\hookrightarrow$ As the ratio of slices is 2 : 3 : 4

Sum of ratio = 2 + 3 + 4

= 9

Finding the slice in Smaller pizza:

$$\text{Slices in } P_S = \frac{\text{ratio of slices in small pizza} \times T \cdot Slic}{\text{Sum of ratio}}$$

$$P_S = \frac{2 \times 18}{9}$$

= 4

Now for Medium pizza:

$$\text{Slices in } P_m = \frac{\text{ratio of medium pizza} \times T \cdot Slices}{Sum \text{ of ratio}}$$

$$P_m = \frac{3 \times 18}{9}$$

$$P_m = 6$$

Now for Large Pizza:

$$\text{Slices in } P_l = \frac{\text{ratio of large Pizza} \times T \cdot Slices}{Sum \text{ of ratio}}$$

$$P_l = \frac{4 \times 18}{9}$$

$$P_L = 8$$

So we have 4, 6, 8 slices in small, medium and large pizzas respectively.

As the price of small pizza,
$P_s = 320$, having 4 slices.

ie
$$4 = 320$$
$$1 \overset{\times}{=} x$$

$$320 \times 1 = 4x$$

$$\frac{^{83}320}{4} = x$$

$$\boxed{80 = x}$$

or the price of a single
slice is Rs 80.

Now The total price, T_p of all
pizza = ?

As, 1 slice = 80 rs
$$18 \text{ slice}^{\times} = x$$
$$80 \times 18 \quad x$$
$$\boxed{x = 1440}$$

So The total price of all pizzas
are 1440.

Now as the weight of a single
slice is 40g
ie 1 slice = 40g
$$18 \text{ slices}^{\times} = x g$$
$$40 \times 18 = xg$$
$$\boxed{x = 720 g}$$

The weight of Total pizza is
720g.

Q NO 6

c) Diameter of a circle is 6cm.
Find the circumference and

area of circle

Given:

$$Diameter = d = 6\,cm$$

To find:

Circumference = ?

Area = ?

Solution:

~~Let diameter = d~~ => Let find radius, $r =$

As Diameter, $d = 2r$

ie $d = 2r$

$$r = \frac{d}{2}$$

$$r = \frac{6}{2}$$

$$\boxed{r = 3\,cm}$$

Finding Circumference, C:

Circumference, $C = 2\pi r$

where $\pi = 3.14$

$$C = 2\,(3.14)\,(3)$$

$$\boxed{C = 18.84\,cm}$$

Finding Area, $a = ?$

$$Area = a = \pi r^2$$

$$a = (3.14)\,(3)^2$$

$$= 3.14 \times 9$$

$$\boxed{a = 28.26\,cm^2}$$

So the circumference of the circle is 18.84 cm, while area is 28.86 cm²

Q NO 6

d) Identify the missing:

i) 13, 24, 46, 90, 178, ___

Solution:

$$24 - 13 = 11 \quad \Big) \times 2$$
$$46 - 24 = 22 \quad \Big) \times 2$$
$$90 - 46 = 44 \quad \Big) \times 2$$
$$178 - 90 = 88 \quad \Big) \times 2$$
$$\boxed{176} \quad \Big) \times 2$$

Missing Number in the series is 176.

~~whose~~

ii) 5, 6, 9, 14, 21, ___

Solution:

$$5 \quad \Big) \; 1$$
$$6 \quad \Big) \; 3$$
$$9 \quad \Big) \; 3$$
$$14 \quad \Big) \; 5$$
$$21 \quad \Big) \; 7$$
$$x \quad \Big) \; 9$$

$$21 + 9 = 30$$

So the missing number is 30.

PART - II

SECTION - I

Q NO 2

a) Briefly explain lipids. What are some major types? What

are their functions?

ANS Definition of Lipids:
These are organic compounds that contain Hydrogen, Carbon and Oxygen atoms which form the structure and function of a living cell.

Explaination:
The word lipid is derived from "Lipos" means fat. These are non polar molecules that are only soluble in non polar solvents, and are insoluble in water.

Structure:
The building block of Lipids are fatty acid, glycerol and sterols.
It is bilayer compound having a non polar head which is hydrophobic, pointing outwords of the bilayer. While, the inner layer is made of non polar tail which is hydrophobic.

Classification:
i) Simple lipids: Types?
These are compound of fatty acid with

glycerol.

For example: common fats.

Compound lipids:

These lipids contain additional groups along with fatty acids & glycerol. These additional group may be phospholipids, glycolipids containing carbohydrates, and lipoproteins containing proteins.
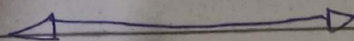
Derived lipids:

These lipids are derived from simple lipid or compound lipids by a process called "hydrolysis".

Function of lipids:

The basic function of lipids are:

⤷ Act as a energy reservior that provide and store energy.

⤷ It regulate the body temperature in the form of fat.

⤷ It form the cell membrane of animal cell.

⤷ It also produce cholesterole in the animal body.

Q NO 2

c) What is hydrogen bonding? Give elaborating structure as examples:

Ans **Hydrogen Bonding:**

It is an intermolecular attractive force between a hydrogen atom directly connected with most electronegative atom of N, O and florine of atom with the electronegative atom of another molecule.

Explanation:

Hydrogen bonding is a type of strong dipole dipole forces, but less stronger then true covalent bonds. In Hydrogen bond the forces are 5% to 10% of a covalent bond.

Formation:

Hydrogen is an electro-positive atom of periodic table having a very high tendency to lose electron. When this Hydrogen atom form a covalent bond with the most electronegative atom (high tendency to accept electron) like florine, oxygen and nitrogen. Then, the share pair of electron

is attracted more towards the electronegative atom. As a result a partial positive charge appears on Hydrogen atom and a partial negative charge appears on the electronegative atom. Now, this Hydrogen atom bearing partial positive charge comes in vicinity of an electronegative atom like O, F or N having lone pair of electron forms Hydrogen bond.

Example of Hydrogen bond in Water molecule:
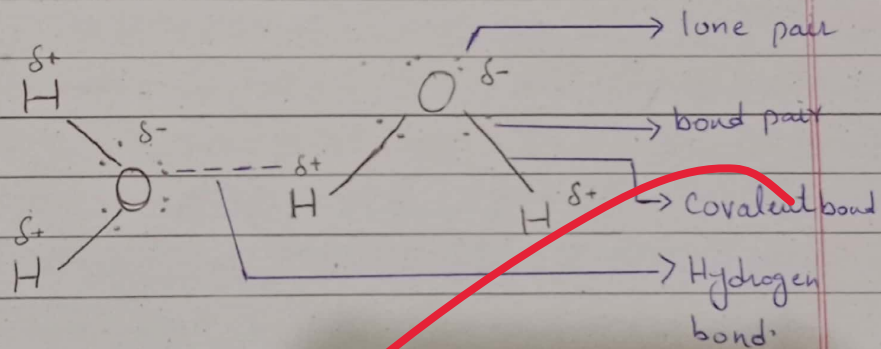
Water molecule (H_2O)

In water molecule we have 2 Hydrogen atom covalently bonded with Oxygen (electronegative) atom. The shared pair or bond pair of electron is attracted more towards oxygen as a result partial negative charge (δ^-) appears on oxygen and partial positive charge (δ^+) on hydrogen.

When this water molecule comes close to another water molecule th lone pair (unshared pair) of electron of oxygen form bond with Hydrogen atom of other molecule, result in Hydrogen bond.

Other Examples:

1) NH_3, Amonia $\Rightarrow$ Hydrogen bond also exist between NH_3 molecules.

2) In structure of DNA, Hydrogen bond also exist between the Nucleotides (Adinine, guvanine, Thyime, Cytosine) to hold the double helixe structure of DNA.
In DNA:
Adinine is bonded to Thiamine, where is Guvamine is bonded to Cytosine.

Q NO 2

d) Discuss the Nervous system of human body?
ANSWER:
Nervous System:
It is system of complex network that sends messages back and fourth in

body. It sends or transmit singles in the form of electrical single signals and chemical signals through certain chemicals called Neurotransmitters.

Types:
The nervous system has two main types:
1) Central Nervous System.
2) Pheripheral Nervous System.

Central Nervous System (CNS)
It is composed of brain and spinal cord. Where brain is located in skull and spinal cord is located in the ver center of vertabral column.

Pheriphral Nervous System (PNS):
It is

Composed of:
1 Somatic PNS
2 Autonomic PNS

Somatic PNS:
This system controls all the voluntary activities of the body (which we can control). like moment, running etc.

Autonomic PNS:

This system controls all involuntary activities ie which we cannot control like breathing, heart beat etc.

```
            ┌─────────────────┐
            │ Nervous System  │
            └─────────────────┘
        ┌──────────┴──────────┐
┌────────────┐         ┌─────────────┐
│  Central   │←───────→│  Pheripheral │
│Nervous System│       │Nervous System│
└────────────┘         └─────────────┘
    ↙    ↘                   │
┌──────┐ ┌────────────┐   →┌──────────────┐
│Brain │ │Spinal Cord │    │Autonomic PNS │
└──────┘ └────────────┘   →┌──────────────┐
                           │Somatic PNS   │
                           └──────────────┘
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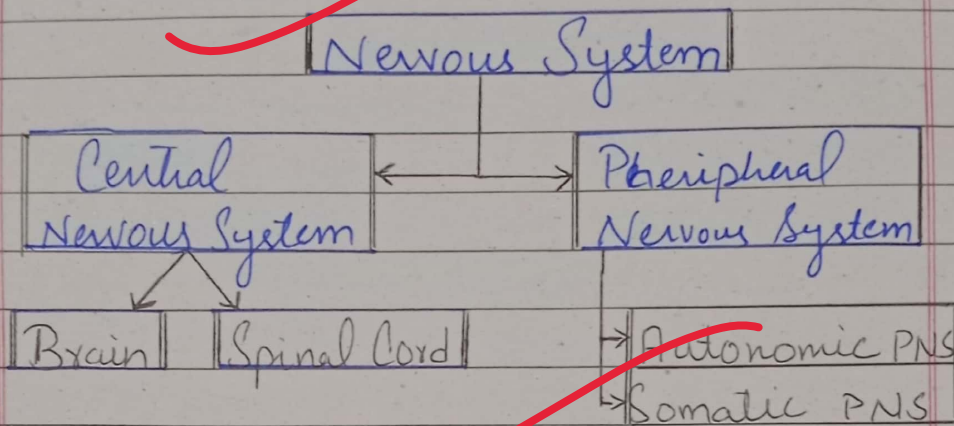
Composition:

The Nervous System is composed of basic units called Nerve cell or Neuron. We have 3 types of Neuron.

i Sensory Neurons

ii Motor Neurons

iii Inter Neurons

Sensory Neurons:

It carry information from sense organs to central Nervous system.
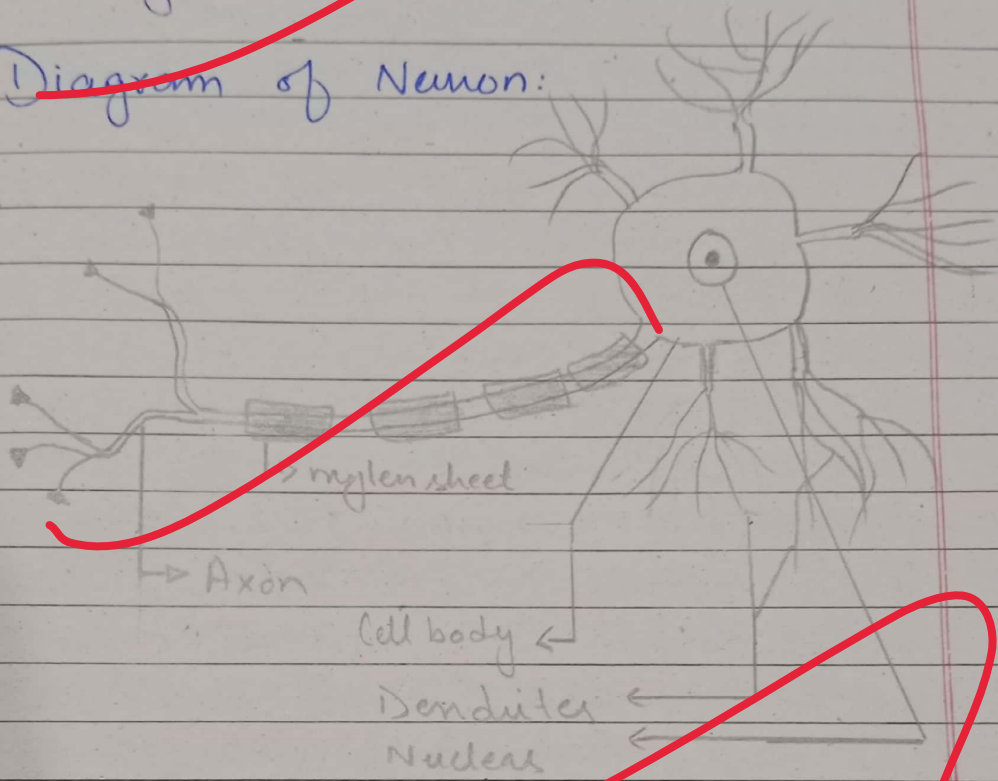
Motor Neurons:

It carry information from Central Nervous system to the body.

Interneurons:

It form The central

Nervous System and any information
from motor to Sensory and from
Sensory to motor.

Diagram of Neuron:

→ mylen sheet

→ Axon

Cell body ←

Dendrites ←

Nucleus ←

Structure of Neuron

Function of Neuron:

1) Dendrites collects/receives information
and trasfer it to the cell body.

2) From the cell body it transfer
throughtout the lenght of
axon to the terminal point Synapse,
in the form of electric signal.

3) Now, from one Neuron the
information is transfer to the
dendrites of other Neuron inthe
form chemical signal through
central chemicals called Neurotransmitter-

4) When it reaches to the dendrites

of other Neuron it again convert back to electric signals and process continue to communicate between body and brain. The CNS contains about 1 billion Neuron. (National health institute).
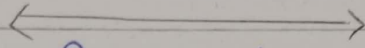
Q. NO 4

a) What is Hepatitis? Explain its causes, symptoms and prevention.

Answer:

Hepatitis:

A condition in which the liver tissue become inflammed due to virses, bacterial infections and Non infectious agents such as drugs, alcoholism or other toxic chemicals and it compromise its function.

Types of Hepatitis:

There are various types of Hepatitis. These are:

- Hepatitis-A
- Hepatitis-B
- Hepatitis-C
- Hepatitis-D
- Hepatitis-E

All of these have different severity level, mode of

transmition and preventions. Among these types Hepatitis B and C is the most dangerous. These hepatitis can leads to liver cirosis and even death. Appoximally 354 million people are suffering from Hepatitis and those without test are far behind by a report of WHO.

Symptoms:

The symptoms of hepatitis vaays based on the Type. Usually the symptoms are mild or no symptoms at all in the begining. Later on when the desease spread it has a Symptoms of:
- General body pain, diaaeher, nausea, vomiting, fever, lost of appetite, malasia, abdominal discomfort, Jaundice. These are common systems of all Hepatitis.

Hepatitis B & C when get more sever leads to liver cirosis and liver cancer.

Hepatitis D usually caused to people already suffering from Hepatitis B and cause cirosis and leads to liver cancer.

Causes:

The Hepatitis A virus (HAV) is most common in low and middle income countries it is usually spread because of unhygenic condition. When people comes in contact with food, water, waste of an infected person, virus develops in them.

The HBV and HCV are mostly spread by using the blades, razers, needles of infected person ie by blood. It can also be caused by sexual intercourse with an infected person.

Approximately 90 - 95% child have chances of these virus virus from the mother during birth.

Treatment:

↳ HAV can be treated by injected pre-vaccines.

↳ For HCV, both in acute & chronic condition, antiviral medication are available like Entecavir, Ribaviran. 3 months course of these tablets/injection help to treat HCV.

↳ 95% of patient can be can be recovered successfully (NIH)

↳ HBV can be prevented by vaccines given at the time

of birth they can also prevent HBV from developing. HBV can also be treated by antiviral drugs available.

Date: _____ Day: _____